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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,422	04/05/2001	Boris Maslov	57357-015	3821

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EXAMINER
NGUYEN, HANH N

ART UNIT	PAPER NUMBER
2834	8

DATE MAILED: 10/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/826,422	MASLOV ET AL.	
	Examiner	Art Unit	
	Nguyen N Hanh	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *7-10 and 17-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Remarks

1. In view of amendment, The Examiner withdraws the objection to the drawings and the specification. Cancellation of claims 7-10 and 17-21 has been acknowledged and the objection and rejection to claims 17-21 have been withdrawn.

Response to Arguments

2. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1,3,5-6 and 11 are rejected under 35 U.S.C. 103(a) as being anticipated by Heidelberg et al. in view of Acquaviva.

Regarding claim 1, Heidelberg et al. disclose a rotary electric motor comprising: a stator configured in the form of an annular ring having a plurality of groups of electromagnet poles (abstract), the groups substantially equidistantly distributed along the angular extent of the annular ring (Fig. 1 and Col. 4, lines 50-56), each of the groups comprising magnetic material magnetically isolated and separated from the other groups (Col. 2, lines 20-25); the electromagnet poles having pole faces separated from each other by gaps, gaps between pole faces within each group being of a substantially

uniform first angular distance; and an annular rotor (4 in Fig. 1), concentric with an axis of rotation and concentric with the annular stator to form a radial air gap therebetween, comprising a plurality of permanent magnets (8) substantially equidistantly distributed with alternating magnetic polarity along the angular extent of the air gap, the permanent magnets having a common magnetic return path (20); wherein each group of electromagnet poles comprises windings that are switchably energized for driving electromotive interaction between the stator and rotor (Col. 2, lines 25-30).

The structure disclosed by Heidelberg et al. fails to show the permanent magnets of the rotor are separated from each other by gaps of a second angular distance different from the first angular distance.

However, Acquaviva discloses a permanent magnet electric motor wherein the rotor are separated from each other by gaps (S in Fig. 3) of a second angular distance different from the first angular distance (gaps 15 between stator poles as described in Col. 5, lines 30-45) for the purpose of reducing cogging torque (Abstract).

Since Heidelberg et al. and Accquaviva are in the same field of endeavor, the purpose disclosed by Accquaviva would have been recognized in the pertinent art of Heidelberg et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al. by reducing the angular length of the permanent magnets (8) to create gaps of a second angular distance different from the first angular distance (gaps between stator poles) as taught by Acquaviva for the purpose of reducing cogging torque.

Regarding claim 3, Heidelberg et al. also disclose a rotary electric motor further comprising a rotor position sensor (sensor 28, Col. 4, lines 55-65), wherein signals for switching energization of the windings are generated in response to the sensor.

Regarding claim 5, Heidelberg et al. also disclose a rotary electric motor wherein the angular distance of the gaps between adjacent pole faces of each stator group differs from the angular distance of the gaps between adjacent stator pole faces of adjacent groups (Fig. 1 and Fig. 4a to 4c).

Regarding claim 6, Heidelberg et al. also disclose an embodiment wherein the angular distance of the gaps between adjacent poles of adjacent stator groups (40 in Fig. 3) is different from the angular distance of the gaps (38) between adjacent permanent magnet poles of the rotor (4).

Regarding claim 11, Heidelberg et al. also disclose a rotary electric motor wherein the rotor surrounds the stator.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidelberg et al. in view of Acquaviva and further in view of Li.

Regarding claim 4, Heidelberg et al. and Acquaviva show all limitations of the claimed invention except showing a rotary electric motor wherein said position sensor comprises a resolver; and said motor further comprises an encoder for generating said signals.

However, Li discloses a rotary electric motor wherein said position sensor comprises a resolver; and said motor further comprises an encoder for generating said signals (claim 6 and 7) for the purpose of detecting the position of rotor.

Since Heidelberg et al., Acquaviva and Li are in the same field of endeavor, the purpose disclosed by Li would have been recognized in the pertinent art of Heidelberg et al. and Acquaviva

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al. and Acquaviva by using a resolver and an encoder in the rotary electric machine as taught by Li for the purpose of detecting the position of rotor.

5. Claims 2,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidelberg et al. in view of Acquaviva and further in view of Hancock et al.

Regarding claim 2, the structure disclosed by Heidelberg et al., modified by Acquaviva show all limitations of the claimed invention except showing a rotary electric motor wherein each stator group comprises no more than a single pair of poles, each pole having a winding configured to form a magnetic polarity opposite to the magnetic polarity of the other pole of the pair, wherein switched energization of the pole pair winding effects reversal of the magnetic polarities of the pole pair.

However, Hancock et al. disclose a rotary electric motor wherein each stator group comprises no more than a single pair of poles, each pole having a winding configured to form a magnetic polarity opposite to the magnetic polarity of the other pole of the pair, wherein switched energization of the pole pair winding effects reversal of the magnetic polarities of the pole pair (Fig. 9a and 9b) for the purpose of preventing flux reversal and high switching frequencies in motor (Abstract, lines 20-24).

Since Heidelberg et al., Acquaviva and Hancock et al. are in the same field of endeavor, the purpose disclosed by Hancock et al. would have been recognized in the pertinent art of Heidelberg et al. and Acquaviva.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al. and Acquaviva by forming stator groups comprising a single pair of pole as taught by Hancock et a. for the purpose of preventing flux reversal and high switching frequencies in motor.

Regarding claim 12, the structure disclosed by Heidelberg et al., modified by Acquaviva shows a rotary electric motor wherein the number of stator group is an odd number (5) but fail to show the number of poles within each group is an even number.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al. and Acquaviva by forming stator groups comprising a single pair of pole (even number of poles) as taught by Hancock et al. for the purpose of preventing flux reversal and high switching frequencies in motor.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidelberg et al. in view of Acquaviva and further in view of Forbes et al.

Regarding claim 13, the structure disclosed by Heidelberg et al., modified by Acquaviva shows all limitations of the claimed invention except showing a rotary electric motor wherein each stator group is individually secured to a non-magnetically permeable support structure, thereby facilitating independent removal and replacement of an individual stator group.

However, Forbes et al. disclose a rotary electric motor wherein each stator core is individually secured to a non-magnetically permeable structure (Fig. 24 and Col. 17, lines 40-45 and The Examiner interprets aluminum as a non-magnetically permeable material), thereby facilitating independent removal and replacement of an individual stator core (Fig. 16) for the purpose simplifying the maintenance of the motor.

Since Heidelberg et al., Acquaviva and Forbes et al. are in the same field of endeavor, the purpose disclosed by Forbes et al. would have been recognized in the pertinent art of Heidelberg et al. and Acquaviva.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al. and Acquaviva by forming individual pole pair groups and secure them to a non-magnetically structure as taught by Forbes et al. for the purpose of simplifying the maintenance of the motor.

Regarding claim 14, Forbes et al. also disclose a rotary electric motor wherein said motor further comprises: a plate member (281 in Fig. 24); and a shaft member (255) located at the axis of rotation wherein each-of said stator cores is secured to said plate member at a spaced radial distance from the axis of rotation; and said plate member is attached to said shaft member (by bearing means 257 Fig. 24) for the purpose of simplifying the maintenance of the motor.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al. and Acquaviva by forming individual pole pair groups and secure them to the plate member at a spaced radial

distance from the axis of rotation and secure the plate member to the shaft as taught by Forbes et al. for the purpose of simplifying the maintenance of the motor.

Regarding claim 15, it is noted that Heidelberg et al. also show a rotary electric motor as wherein said spaced radial distance is greater than the radial distance between inner and outer boundary diameters of the stator annular ring.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidelberg et al. and Acquaviva in view of Forbes et al. and further in view of Li.

Regarding claim 16, Heidelberg et al., Acquaviva and Forbes et al. show all limitations of the claimed invention except showing a rotary electric motor wherein said motor further comprises a rotor housing, the rotor annular rotor being mounted within the housing at a spaced radial distance from the axis of rotation, and the rotor housing is journalled for rotation about the shaft through bearings.

However, Li discloses a rotary electric motor wherein said motor further comprises a rotor housing (11' in Fig. 1), the rotor annular rotor being mounted within the housing at a spaced radial distance from the axis of rotation, and the rotor housing is journalled for rotation about the shaft through bearings (74') for the purpose of mounting the rotor directly to the wheel of a bicycle.

Since Heidelberg et al., Acquaviva, Forbes et al. and Li are in the same field of endeavor, the purpose disclosed by Li would have been recognized in the pertinent art of Heidelberg et al., Acquaviva and Forbes et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Heidelberg et al., Acquaviva and Forbes et

al. by including a rotor housing, the rotor annular rotor being mounted within the housing at a spaced radial distance from the axis of rotation, and the rotor housing is journalled for rotation about the shaft through bearings as taught by Li for the purpose of mounting the rotor directly to the wheel of a vehicle.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information on How to Contact USPTO

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703)305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner 's supervisor, Nestor Ramirez can be reached on (703)308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1782.

HNN

September 27, 2002

OR RAMIREZ
TENT EXAMINER
NTER 2800